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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/762,945

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Ronald F. Kaminsky

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1091

7590

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William H. Dippert
Reed Smith LLP
599 Lexington Avenue
29th Floor
New York, NY 10022

EXAMINER

BALI, VIKKRAM

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 03/04/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/762,945

Applicant(s)

KAMINSKY ET AL.

Examiner

Vikkram Bali

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3,6.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7 and 8 recites the limitation "the color" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3-6, 9, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Luke et al (US 5483603).

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With respect to claim 1, Luke discloses generating an image of the pcb, and determining the presence of oxide (see col. 4, lines 25-38 and col. 5, lines 20-22 the distinguishing between the wire "oxide" and substrate) as claimed.

With respect to claims 3-6, he further discloses, the pixilated image is generated having brightness values and oxide is determined by the brightness values, the images are of different colors such as red, green and blue, and the presence of oxide depends upon a single color brightness, (see col. 5, lines 20-25, lines 45-60) as claimed.

With respect to claim 9, he further discloses, comparison between the brightness levels of two colors, (see col. 5, lines 40-68, the panel feature i.e. wire "oxide" is detected by simply comparing the pixel color to the lockup color value) as claimed.

With respect to claim 12, he further discloses, eliminating pixel from consideration based on the brightness level of the three colors, (see col. 5, lines 40-55) as claimed.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 2, 7-8, 10-11, 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luke et al (US 5483603) in view of Bishop et al (US 5524152).

With respect to claim 7 and 8 Luke discloses the invention substantially as disclose and described above in claim 6. However, Luke fails to disclose, the red color is the oxide and all the other colors are eliminated from being oxide, as claimed. Bishop teaches, the red color is the oxide and all the other colors are eliminated from being oxide, (see col. 7, lines 42-45, the copper conductor return a golden brown, i.e. the wavelengths of golden brown in the visible light is very close to "red" color) as claimed.

It would have been obvious to one ordinary skilled in the art at the time of invention to simply combine the two references as they are analogous because they are solving similar problem of pcb inspection. And, the comparison of the oxide brightness to the brightness in the lookup table of Luke can simply be replaced by the brightness of

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the copper, the motivation is to be able to inspect the pcb under multicolor (see col. 1, lines 58-62 of Bishop).

Claims 10, 11, 13 and 23 are rejected for the same reasons as set forth in the rejection of claims 7 and 8, because claims 10, 11, 13 and 23 are claiming similar subject matter i.e. comparing the brightness of the three colors to the brightness of the copper, as claimed in claims 7 and 8.

With respect to claim 2, Bishop further teaches without determining the pixel being the laminate pixel, (see col. 7, lines 24-34 where the pixel is read and then find out what kind of material is on the substrate by comparing the pixel brightness to the material brightness, and not first finding out if the pixel is laminate pixel) as claimed.

Claims 17 and 18 are rejected for the same reasons as set forth in the rejection of claims 7 and 8, because claims 17 and 18 are claiming similar subject matter i.e. comparing the brightness of the three colors to the brightness of the copper, as claimed in claims 7 and 8.

8. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luke et al (US 5483603) in view of Bishop et al (US 5524152) as applied to claim 13 above, and further in view of Brecher et al (US 5544256).

With respect to claim 14, Luke and Bishop disclose the invention substantially as disclose and described above in claim 13. However, they fail to disclose, mahalanobis distance, as claimed. Brecher teaches the defect detection in the pcb using the mahalanobis distance comparison to the threshold, (see col. 8, lines 7-15) as claimed.

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It would have been obvious to one ordinary skilled in the art at the time of invention to simply combine the references as they are analogous because they are solving similar problem of pcb inspection. And, the Mahalanobis distance is well known in the art and therefore, be conventional to use that in order to compare the distances in order to find the defect or non defect on PCB.

With respect to claims 15 and 16, Mahalanobis distance being between 4 and 8 or about 6, is just an design choice as mentioned by the Brecher in col. 8 lines 7-15, this choice could be any number depending upon the strength of the or the wavelength of the material use or to be detected on the PCB.

Claims 19-22 are rejected for the same reasons as set forth in the rejection of claims 1-18, because claims 19-22 are claiming similar subject matter as claimed in claims 1-18.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 703.305.4510. The examiner can normally be reached on 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703.308.6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vikkram Bali
Examiner
Art Unit 2623



vb
February 27, 2004